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(54) Mobile phone with additional plug-in communication module

(57) A mobile telephone unit 1 is disclosed, which is capable of being used as a standard mobile telephone 3 for initiating and receiving telephone calls on a GSM network, or, when connected to a second section 13 becomes capable of initiating and receiving telephone calls on a satellite-based network. The first section 3 acts as an interface for the second section 13, providing the keypad 5, display 7, earpiece 9 and microphone 11 for the second section. The second section 13 contains all the means necessary for initiating and receiving calls within the satellite based network, whilst also being provided with means for powering the unit 1. The user can initiate and receive telephone calls on the satellite-based network by using the interface means on the first section 3.

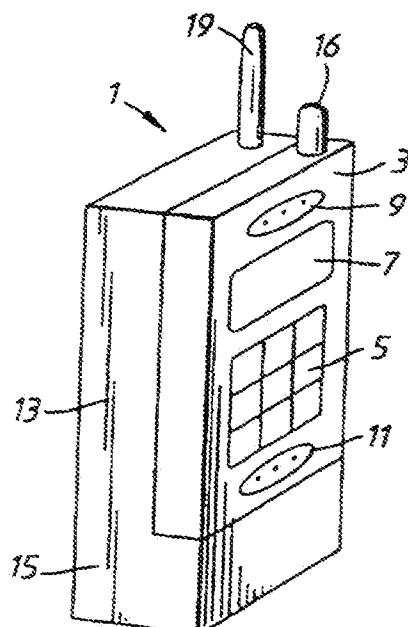


Fig.1

GB 2 314 483 A

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The print reflects an assignment of the application under the provisions of Section 30 of the Patents Act 1977.

1/2

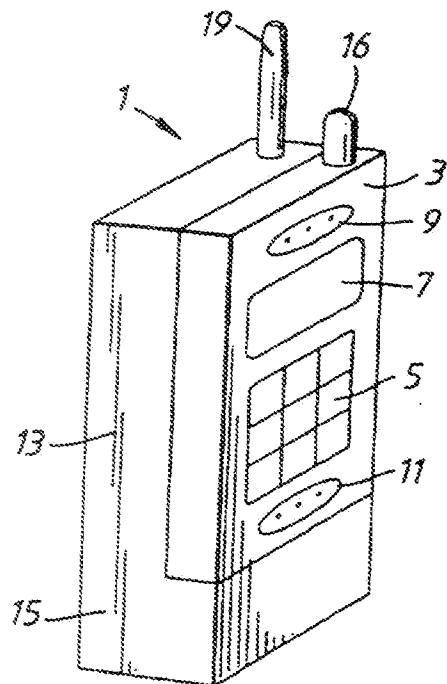


Fig. 1

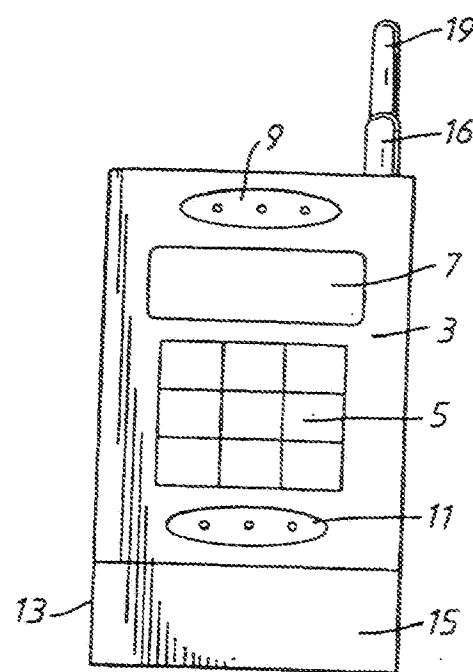


Fig. 2

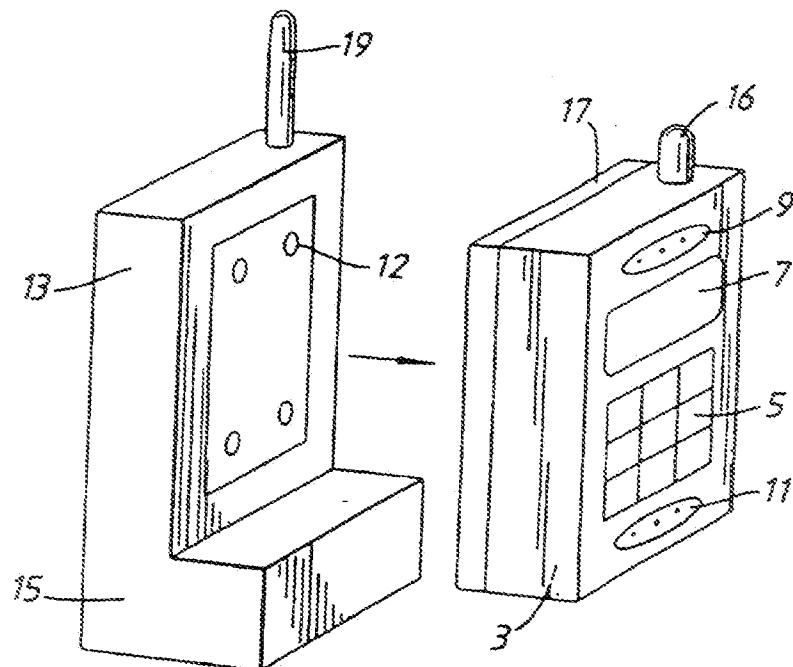


Fig. 3

2/2

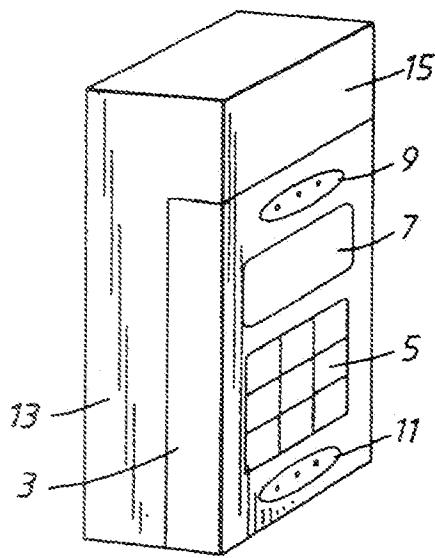


Fig.4

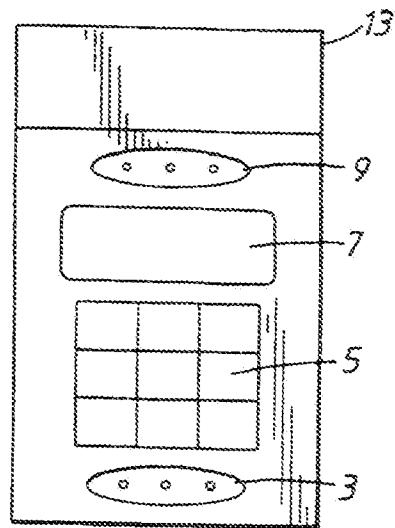


Fig.5

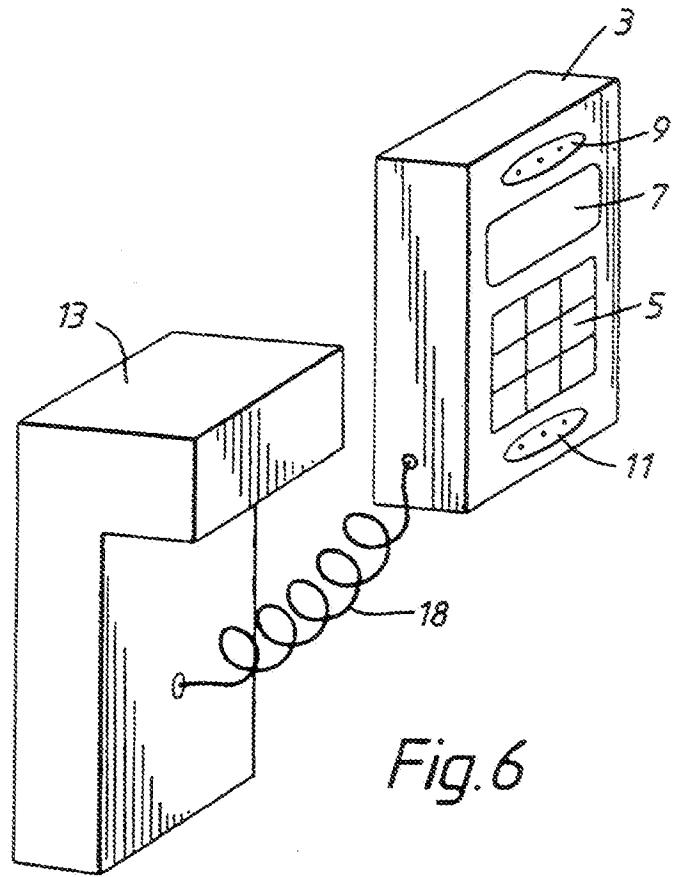


Fig.6

MOBILE TELEPHONE ARRANGEMENTS

The invention relates generally to mobile telephone arrangements and more specifically but not exclusively to mobile telephones capable of initiating and receiving telephone calls on two or more different systems.

According to the invention, there is provided a mobile telephone unit, comprising two sections, the first section comprising means for initiating and receiving calls within a first telecommunications system, the second section comprising means for initiating and receiving calls within a second telecommunications system, the first section providing interface means for interfacing between the user and each of the sections, the two sections being releasably connected together.

According to the invention, there is provided a mobile telephone unit, comprising two releasably interconnectable sections, the first section comprising an independent mobile telephone unit which is capable of communicating on a first mobile telephone network and which when connected to the second section enables the second section capable of communicating on a second mobile telephone network.

Mobile telephones embodying the invention will now be described,

by way of example only, with reference to the accompanying diagrammatic drawings in which:-

Figure 1 is a schematic side perspective view of one of the telephones;

Figure 2 is a schematic front view of the telephone of Figure 1.

Figure 3 is a schematic side perspective view of the telephone of Figure 1, showing a first section removed;

Figure 4 is a schematic side perspective view of another of the telephones;

Figure 5 is a schematic front view of the telephone of Figure 4;
and

Figure 6 is a schematic side perspective view of the telephone of Figures 4 and 5, showing a first section removed.

The telephone unit 1 of Figures 1 to 3 comprises two main sections. The first section 3 is provided with a keypad 5, a display 7, an earpiece 9, a microphone 11 and an antenna 16 laid out in a conventional manner. The first section 3 is further provided with means for initiating and receiving telephone calls

within a first telecommunications system such as a digital GSM network.

The first section 3 is releasably connected to a second section 13, by means of suitable connectors 12.

The second section 13 comprises means for initiating and receiving telephone calls within a second telecommunications system such as the "Globalstar" satellite-based network. The second section 13 further comprises a battery pack 15 and an antenna 19.

In use, the first section 3 may be removed from the second section 13. It then operates as an independent GSM mobile telephone on the GSM network. On separation of the two sections, it will be necessary for a separate battery pack 17 to be connected to the first section 3 in order to power it unless the first section 3 has its own integral battery pack. The first section 3 may require a SIM card to be inserted to allow normal function of the GSM telephone.

When the two sections 3,13 are connected, the first section 3 acts as an interface for the second section 13. That is to say, the keypad 5, display 7, earpiece 9 and microphone 11 are then connected to the communications means in the second section 13

and the user can initiate and receive telephone calls on the second telecommunications systems via the controls on the first section 3. Power is provided by the battery pack 15, and the signals are received and transmitted via the second antenna 19.

Normally, the first section 3 would only be usable when separated from the second section 13. However, a switch could be provided to allow the use of either section when they are connected together.

The user is able to communicate on both the first and second telecommunication systems, in this example a GSM network and a satellite-based system, using one telephone unit.

Telephones capable of reliable communication on satellite networks require features which do not lend themselves easily to mobile telephone design. For example, the electrical and physical requirements of the antenna imposed by the system, and the requirement for a large battery pack would necessitate a large, bulky telephone. A mobile telephone capable of communicating on both a GSM network and a satellite-based network would therefore be large and expensive. This would have many disadvantages when the unit was being used within the GSM network, where a small, cheap mobile telephone handset would perform equally well.

In the manner described previously, it is possible for a user to have a small and inexpensive pocket phone when GSM coverage is available, whilst retaining the possibility of satellite-based communication for the times when GSM coverage is not available.

It will be appreciated that the first network need not be a GSM network but can be any digital or analogue terrestrial network, additionally, the second network need not be a Globalstar network but can be any other suitable telecommunications network.

It will also appreciated that the first section 3 need not be directly connected to the second section 13, but any suitable connection means may be used. For example, a spring-loaded mechanism may be used.

It will further be appreciated that the battery pack 17 for the first section 3 need not be removed before connection to the second section 13, but that the second section 13 can be designed to accommodate the battery pack 17.

Figures 4 and 5 show a further embodiment of the invention in which the first section 3 is connected in a different manner to the second section 13.

Figure 6 shows a further modification in which the first section

3 is connected to the second section 13 by means of a cable 18. In this modification, the second section 13 may be mounted in a vehicle (not shown) in order to receive power.

CLAIMS

1. A mobile telephone unit, comprising two sections, the first section comprising means for initiating and receiving calls within a first telecommunications system, the second section comprising means for initiating and receiving calls within a second telecommunications system, the first section providing interface means for interfacing between the user and each of the sections, the two sections being releasably connected together.
2. A mobile telephone unit according to claim 1, in which the interface means includes at least one of a keypad, an earpiece, a display and a microphone.
3. A mobile telephone unit according to claim 1 or 2, in which the first section is a mobile telephone capable of communicating on the first telecommunications system when disconnected from the second section.
4. A mobile telephone unit according to any preceding claim, in which the second section includes a battery pack for supplying power to both sections when they are connected together.
5. A mobile telephone unit according to any preceding claim, in which the first telecommunications system is a terrestrial

system and the second telecommunications system is a satellite-based system.

6. A mobile telephone unit according to any one of claims 1 to 4 in which the first and second telecommunications systems are terrestrial systems.

7. A mobile telephone unit according to claim 5, in which the first telecommunications system is a GSM network and the second telecommunications system is a Globalstar network.

8. A mobile telephone unit according to any preceding claim, in which the first section is connected to the second section by means of a cable.

9. A mobile telephone unit according to any preceding claim, in which the second section is mounted in a vehicle.

10. A mobile telephone unit, comprising two releasably interconnectable sections, the first section comprising an independent mobile telephone unit which is capable of communicating on a first mobile telephone network and which when connected to the second section enables the second section capable of communicating on a second mobile telephone network.

11. A mobile telephone unit according to claim 10, in which the first section acts as an interface between the user and the second section when the two sections are interconnected.
 12. A mobile telephone unit according to claim 10 or 11, in which the first mobile telephone network is a terrestrial network and the second mobile telephone network is a satellite-based network.
 13. A mobile telephone unit according to claim 10 or 11 in which the first and second mobile telephone networks are terrestrial networks.
 14. A mobile telephone unit according to claim 12 or 13 in which the first telecommunications system is a GSM network and the second telecommunications system is a Globalstar network.
 15. A mobile telephone unit according to any one of claims 10 to 14, in which the sections are interconnectable by means of plug and socket connections.
 16. A mobile telephone unit according to any one of claims 10 to 14, in which the sections are interconnectable by means of a cable.

17. A mobile telephone unit accordingly to any one of claims 10 to 14, in which the sections are interconnectable by means of spring-loaded connections.

18. A mobile telephone unit substantially as herein before described with reference to Figures 1 to 3 of the accompanying drawings.

19. A mobile telephone unit substantially as herein before described with reference to Figures 4 to 5 of the accompanying drawings.

20. A mobile telephone unit substantially as herein before described with reference to Figure 6 of the accompanying drawings.



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11

Application No: GB 9613008.3
Claims searched: 1 to 20

Examiner: Mr Jared Stokes
Date of search: 16 August 1996

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): H4L (LDLX, LDSC, LECSX)

Int Cl (Ed.6): H04B (1/034, 1/08)
H04M (1/02, 1/03)
H04Q (7/32)

Other: On-Line: WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	GB 2 292 653 A	(Motorola) See page 2 line 19-page 3 line 16, figure 1	1-3,6,10, 11,13,15
X,Y	EP 0 521 609 A2	(Nokia) See whole document, especially figure 3	X:1-4,6, 10,11, 13,15 Y: 8,16
X	WO 96/08878 A1	(Ericsson) See pages 20-21, figure 8	1-3,5, 10-12,15
Y	WO 95/23485 A1	(Voxson) See page 4 line 25-page 5 line 2	8,16

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.